

REMARKS

The claims were rejected as being anticipated or obvious in view of US 6,440,383 to Duyvesteyn (hereinafter referred to Duyvesteyn I) and WO 01/00530 to Duyvesteyn (hereinafter referred to as Duyvesteyn II). Claim 1 has been amended to specify particular novel and nonobvious aspects of the present invention. The present invention improves on the known prior art and is concerned with a low temperature process to form phase pure rutile form titanium dioxide pigment. The process of the present invention achieves this result by adding a selected catalyzing salt in an amount from about 3% by weight of the equivalent amount of titanium dioxide to about the amount corresponding to the saturation point of the catalyzing salt in the feed solution. The catalyzing salt is selected from two or more of NaCl, KCl, and LiCl. Importantly, the catalyzing salt does not significantly change chemical composition. The process also requires that the calcining be conducted under certain conditions such that the calcination temperature is greater than a melting point temperature of the catalyzing salt and such that the calcination is conducted for a period of time sufficient to melt the catalyzing salt.

In contrast, Duyvesteyn I does not disclose or suggest each of the above features. Duyvesteyn I teaches a method to make ultrafine titanium dioxide. Although Duyvesteyn I notes that the concentration and type of chemical control agent as well as the calcination conditions determine the desired crystalline form and crystal size, Duyvesteyn I does not provide any specific teaching of the limitations required by claim

1. In fact, in the sole example that shows the production of rutile crystals, Duyvesteyn I describes the use of oxalic acid and calcination at 920° C for 1 hour. These parameters, however, teach away from the presently claimed process conditions.

While Duyvesteyn I notes that minor quantities of chemical control agents including chloride salts of sodium and potassium can be used, Duyvesteyn I is completely silent about the use of lithium chloride or about the use of particular eutectic mixtures. As pointed out in the present specification, eutectic mixtures are advantageous since they have a melting temperature that is lower than the temperature of any single entity. As a result, the calcination temperature can be lower.

Duyvesteyn I also does not teach or suggest the use of a catalyzing salt in an amount from about 3% by weight of the equivalent amount of titanium dioxide to about the amount corresponding to the saturation point of the catalyzing salt in the feed solution. Instead, Duyvesteyn I teaches that minor amounts be used. Duyvesteyn I, however, does not teach the use of from about 3% by weight of the equivalent amount of titanium dioxide to about the amount corresponding to the saturation point of the catalyzing salt in the feed solution.

Duyvesteyn I does not teach or suggest the above limitations required by claim 1 and therefore does not anticipate or render obvious claim 1. Withdrawal of the rejection is respectfully requested. As for the dependent claims, it is noted that Duyvesteyn I does not teach washing the salt from the calcined titanium dioxide, as required by claim 2. Duyvesteyn I also does not teach or suggest recycling the washed salts. While the

Examiner is correct that Fig. 2 shows recycling of the chemical control agent, Fig. 2, this recycling is before the calcination and not after, as required by the claim. Thus, this claim as well as other dependent claims are not anticipated or rendered obvious by Duyvesteyn I.

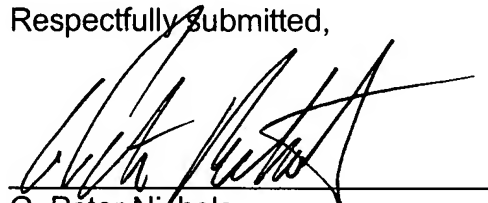
As for Duyvesteyn II, it is similar to Duyvesteyn I in that it does not teach or suggest the features now required by claim 1. Duyvesteyn II differs from Duyvesteyn I in that it discloses the use of $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ in amounts up to 6.3% as wt% of TiO_2 . To the extent that the Examiner treats $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ as the claimed catalyzing salt, Applicants contend that it is not one of the claimed chloride salts and it significantly changes its chemical composition. As the Merck Index notes in the presence of much water (which would be expected in the claimed aqueous feed solution), it forms an insoluble basic salt (see attached relating to stannous chloride).

On the other hand, Duyvesteyn II does not teach anything more than Duyvesteyn I with respect to the amounts or specific combinations of the claimed catalyzing salt, to the temperature of calcination, and to the period of time of calcination. Because Duyvesteyn II does not add anything to Duyvesteyn I, it cannot anticipate or render obvious, either alone or in combination with Duyvesteyn I. Therefore, Applicants respectfully request withdrawal of the rejection of claim 1.

As for the dependent claims, the response addressing Duyvesteyn I applies equally to Duyvesteyn II. Therefore, the rejection of the dependent claims on Duyvesteyn II should be withdrawn.

If there are any questions concerning this submission, the undersigned attorney can be reached at (312) 321-4276 to resolve any remaining issues.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'G. Peter Nichols', is written over a horizontal line.

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